

IN THE SPECIFICATION

Please replace the paragraph at page 24, line 27 to page 25, line 14, with the following rewritten paragraph:

As shown in FIG. 4A, a sensor head according to a second embodiment of the present invention encompasses a three-dimensional base body 40, which has a curved surface allowing definition of a circular orbital band B, an electroacoustic transducer 21, which is deployed on the orbital band B of the three-dimensional base body 40 and excites surface acoustic wave so as to perform multiple roundtrips along the orbital band B, and a sensitive film ~~[[25]]~~ 26, which is formed on a part of the surface of the orbital band B of the three-dimensional base body 40 and configured to react with specific gas molecules. The three-dimensional base body 40 is a homogeneous material sphere 40 as with the first embodiment, but is different from the first embodiment in that a sensitive film 26 is formed only on a part of the homogeneous material sphere 40. An interdigital transducer 21, which serves as an electroacoustic transducer 21, is formed on a part of the equator of the homogeneous material sphere 40 without the sensitive film 26.

Please replace the paragraph at page 39, lines 1-19, with the following rewritten paragraph:

FIG. 12B shows an exemplary sensor head using a thermocouple 42. A first metallic film 423 pattern and a second metallic film ~~[[423]]~~ 424 pattern are formed partially overlapping each other and extremely close to the orbital band B on the surface of the homogeneous material sphere 40, implementing a temperature measuring unit (temperature measuring contact), from which wiring patterns are delineated up to bonding pads 421 and ~~[[423]]~~ 424. As shown in FIG. 12B, the interdigital transducer 21 is formed on a part of the surface of the orbital band B, and is connected to bonding pads 211 and 212. A high

frequency electric signal is supplied from a high frequency generator on a packaging board omitted in the drawing via the bonding pads 211 and 212. The supplied high frequency electric signal is then converted using a piezoelectric transducer, thereby exciting surface acoustic wave. In addition, the interdigital transducer 21, serving as a piezoelectric transducer, converts the surface acoustic wave which has orbited along the belt-shaped orbital band B on the equator into a high frequency electric signal again, the electric signal again is then transferred to a detection/ output unit on the packaging board, not shown in the drawing, via the bonding pads 211 and 212, and detected by the detection/ output unit.

Please replace the paragraph at page 39, line 20 to page 40, line 5, with the following rewritten paragraph:

It is preferable that the wiring pattern of the temperature sensor up to the bonding pad 421 shown in FIG. 12B be made of the first metallic film 423. Alternatively, a metallic film, which serves as a compensation conductor having characteristics similar to the first metallic film 423, may be used. Similarly, it is preferable that the wiring pattern up to the bonding pad 422 be made of the second metallic film 424. Alternatively, a metallic film, which serves as a compensation conductor having characteristics similar to the second metallic film 424, may be used. The electrical connection from the wiring patterns of the temperature sensor further extends to a reference contact point disposed on the packaging board, not shown in the drawing, via the bonding pads 421 and ~~[[423]]~~ 422, and temperature is then measured with a measuring tool on the packaging board.

Please replace the paragraph at page 40, line 24 to page 41, line 19, with the following rewritten paragraph:

The rectangular patterns of the first metallic film 423 and the second metallic film ~~[[423]]~~ 424 having a thickness of approximately 50 nanometers to 300 nanometers, and a side length of approximately 0.5 millimeter to two millimeters should be formed. For example, at an ambient temperature of 23 degrees centigrade, the increase in the temperature of a sensor head of approximately 0.08 degree centigrade is measured, when high frequency burst signals of 45 MHz with 100 microseconds are irradiated to the sensor head at 1 KHz, employing a temperature sensor encompassing the first metallic film 423 made of 10% Cr-Ni alloy film having a side of approximately one millimeter and a thickness of approximately 100 nanometers, and the second metallic film 424 made of 2% Al-Ni alloy film having a side of approximately one millimeter and a thickness of 100 nanometers, the first metallic film 423 and the second metallic film 424 are stacked at mutually displaced locations. On the other hand, according to a measurement method using a wire-type chromel-alumel thermocouple in point-contact with the surface of the homogeneous material sphere 40, with a detection sensitivity of 0.03 degrees, a change of 0.08 degrees cannot be measured. As described above, the temperature sensor shown in FIG. 12B can measure temperature without delay as opposed to the case of measuring the surface temperature of the homogeneous material sphere 40 by contacting an independent thermocouple with the surface of the homogeneous material sphere 40.

Please replace the paragraph at page 42, line 24 to page 43, line 4, with the following rewritten paragraph:

Although, it is preferable that the wiring pattern of the temperature sensor up to the bonding pad 421 shown in FIG. 12C is made of the same material as the resistance-detection

pattern 425, alternatively, a metallic film having high electric conductivity such as aluminum (Al), gold (Au), and copper (Cu) can be used for the material of the wiring pattern. The wiring pattern extends to a packaging board, not shown in the drawing, via the bonding pads 421 and ~~[[423]]~~ 422, and temperature is then measured with a measuring tool on the packaging board.

Please replace the paragraph at page 47, lines 1-25, with the following rewritten paragraph:

Since the orbital band B for the surface acoustic wave may be formed only in the vicinity of the equator, the metallic bumps 50a and 50b may be connected to anywhere except for the orbital band B so as to fix the homogeneous material sphere 40 to the packaging board 62. Metallic pads (bonding pads) for attaching the metallic bumps 50a and 50b are provided on an area other than the orbital band B for the surface acoustic wave. However, to supply power to an interdigital transducer from a high frequency generator provided on the packaging board 62 side, and transfer a high frequency electric signal from the interdigital transducer to a detection/ output unit provided on the packaging board 62 side, an electrode interconnect 27 is formed extending from the interdigital transducer, and metallic pads (bonding pads) are formed on the terminals of the electrode interconnect 27. Note that the high frequency generator and the detection/ output unit are not shown in FIG. 14; however, they are provided on the packaging board 62 of the sensor unit according to the ninth embodiment. The first board wiring 61a is electrically connected to the high frequency generator, and the second board wiring 61b is electrically connected to the detection/ output unit. The metallic bumps 50a and 50b serving as the conductive connectors 50a and 50b electrically connect the respective first and the second board wirings 61a, 61b to the electroacoustic transducer (not shown in the drawing). Alternatively, instead of such “a

system-on-package”, in which the high frequency generator and the detection/ output unit are merged on the packaging board 62, the high frequency generator and the detection/ output unit may be located outside the packaging board 62 to be connected.

Please replace the paragraph at page 48, line 22 to page 49, line 10, with the following rewritten paragraph:

As shown in FIG. 16, a sensor unit according to a tenth embodiment of the present invention encompasses a packaging board 65 on which a three-dimensional base body 40 is mounted, a high frequency generator (not shown in the drawing), which is allocated on the packaging board 65 and feeds a high frequency electric signal to an electroacoustic transducer (not shown in the drawing), a detection/ output unit (not shown in the drawing), which is allocated on the packaging board 65 so as to measure the high frequency electric signal pertaining to the propagation characteristic of the surface acoustic wave from the electroacoustic transducer, a first board wiring 64a, which is delineated on the surface of the packaging board 65 and electrically connected to the high frequency generator, a second board wiring 64b, which is delineated on the surface of the packaging board 65 and electrically connected to the detection/ output unit, and conductive connectors 63a and 63b, which electrically connect the first board wiring 64a and the second board wiring 64b to the electroacoustic transducer, respectively.

Please replace the paragraph at page 49, lines 14-18, with the following rewritten paragraph:

The configuration of the sensor unit according to the tenth embodiment is different from the sensor unit according to the ninth embodiment in that the sensor unit is mounted on the parallel-plate packaging board 65 via bonding wires 63a and 63b, which serve as the conductive connectors 63a and 63b.

Please replace the paragraph at page 49, lines 19-27, with the following rewritten paragraph:

The feature of the sensor unit according to the tenth embodiment inheres in the packaging board 65 made of epoxy resin, which has a top surface (first principal surface) being provided with a cavity 66 larger in diameter than a homogeneous material sphere 40. The board wirings 61a and 61b are delineated on the periphery of the cavity 66 on the top surface (first principal surface) of the packaging board 65. The homogeneous material sphere 40 is electrically connected to the board wirings 61a and 61b via the bonding wires 63a and 63b, and is suspended and retained in the cavity 66.

Please replace the paragraph at page 50, lines 12-25, with the following rewritten paragraph:

Although the high frequency generator and the detection/ output unit are not described with the sensor unit according to the tenth embodiment, the high frequency generator and the detection/ output unit may be formed on the packaging board 65 so as to implement a system-on-package, or alternatively, the high frequency generator and the detection/ output unit may be located outside the packaging board 65 to be connected with. When circuits for the high frequency generator and the detection/ output unit are integrated onto the homogeneous material sphere 40, measured results may be directly obtained on the homogeneous material sphere 40. Note that it is preferable that target measurement gas should flow perpendicular to the plane of the top surface of the packaging board 65 so that target measurement gas can pass through the cavity 66 according to the sensor unit assembling architecture of the tenth embodiment.